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FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

**BEFORE THE  
FEDERAL COMMUNICATIONS COMMISSION**

In the Matter of )  
)  
Promotion of Competitive Networks in )  
Local Telecommunications Markets )  
)  
Wireless Communications Association )  
International, Inc. Petition for Rulemaking to )  
Amend Section 1.4000 of the Commission's )  
Rules to Preempt Restrictions on Subscriber )  
Premises Reception or Transmission )  
Antennas Designed to Provide Fixed Wireless )  
Services )  
)  
Cellular Telecommunications Industry Association )  
Petition for Rule Making and Amendment of the )  
Commission's Rules to Preempt State and Local )  
Imposition of Discriminatory And/or Excessive )  
Taxes and Assessments )  
)  
Implementation of the Local Competition )  
Provisions in the Telecommunications Act of 1996 )  
)

WT Docket No. 99-127

99-217

CC Docket No. 96-98

**COMMENTS OF CAIS, INC.**

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August 27, 1999

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## **SUMMARY**

CAIS, Inc., ("CAIS") is an Internet Service Provider that offers high speed Internet access solutions to consumers and businesses. CAIS's service offerings include application of a patented technology that utilizes previously-wasted frequency spectrum on existing in-house copper wiring. This technology does not impair the capacity of existing wiring to accommodate regular voice telephone service. CAIS maintains that the Commission should adopt rules ensuring the following:

- The Demarcation point in Multi-Tenant Environments should be located at the Minimum Point of Entry;
- Irrespective of whether the Commission decides to order a uniform location of the Demarcation Point at each building's Minimum Point of Entry, building owners and telecommunications users should still have full access to in-house cable and wiring;
- The FCC should preempt state authority over inside wiring; and
- Competitive providers should be permitted to perform their own installations and maintenance on building wiring.

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**COMMENTS OF CAIS, INC.**

CAIS, Inc. ("CAIS") submits these comments in the above captioned proceeding in which the Federal Communications Commission ("FCC" or "Commission") requested comment on a number of wide-ranging issues affecting the development of competition in the local exchange market. CAIS maintains in these comments that the FCC should require that network in-house

wiring be made available to any telecommunications carrier or end user on a non-discriminatory basis.

## **I. INTRODUCTION**

CAIS, Inc. is a first tier Internet Service Provider ("ISP") that offers a full range of high speed Internet access solutions to consumers and businesses, using advanced technologies. CAIS currently operates a nationwide ATM Internet backbone network and maintains peering arrangements with various public and private partners with numerous points of presence ("POPs") around the country. CAIS's service offerings include OverVoice<sup>1/</sup>, its patented means of utilizing previously-wasted frequency spectrum on existing in-house copper wiring to provide ultra-fast Internet connection. OverVoice is a cost effective access solution applicable to large MTEs and existing hotel infrastructures.

OverVoice does not impair the capacity of existing copper wiring to accommodate regular voice telephone service. Rather, OverVoice employs unutilized frequencies (between 3MHz and 15Mhz) on the same wiring to run an Ethernet-based platform and permit the user to transmit Internet and voice signals simultaneously. OverVoice is installed at higher bands on the frequency spectrum than the customer's voice service, and is equally functional on simple inside wiring or wiring served through a PBX. OverVoice separates voice and data signals and creates an Ethernet

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<sup>1/</sup> OverVoice is a registered trademark of CAIS, Inc.

local area network within an MTE. One of the principal uses of OverVoice is to permit secure, dedicated high speed Internet connection.

A principal advantage of the OverVoice technology is that it brings high-speed data communications to multi-tenant residential environments, where the installation of new wiring plant may be impractical. Installation of new wiring may be economically infeasible because of limited demand or lack of riser capacity. Introduction of OverVoice technology on existing copper wiring is so economical that CAIS usually seeks to install its facilities in the entire building at once, not limiting the installation to units occupied by targeted customers.

The principal beneficiaries of OverVoice are residents of MTEs who work in their homes or have other reasons to need high speed (T-1 to 10 Mbps) connectivity to the Internet. Other beneficiaries include owners of older MTEs and hotels who need to offer the amenity of high-speed Internet access to their tenants and guests without the often-prohibitive cost of rewiring.

## **II. BACKGROUND**

### **A. OverVoice Technology**

Installation of OverVoice begins in the MTE's central wiring room where the ILEC locates its equipment, usually in the building's basement or on the first floor. A diagram of the facility is attached as Exhibit A.<sup>2/</sup> CAIS purchases a dedicated line, such as a DS-1 circuit, from its POP to

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<sup>2/</sup> Exhibit A depicts an arrangement in which voice and data signals are transmitted over the same lines only from the OverVoice Control Unit to the end user's residence. An alternative arrangement would be to transmit voice and data traffic simultaneously over the same wires from the basement Main Distribution Frame to the customer's premises. The  
(continued...)

the MTE (indicated in Exhibit A as the "Internet Feed"). The Internet Feed is terminated by a LEC to CAIS's Main Distribution Frame ("MDF") in the central wiring room. The MDF is comprised of an authentication server, an ethernet switch, and an industry-standard "66-block." OverVoice then utilizes existing copper riser cable from the MDF to one of several Intermediate Distribution Frame ("IDF") locations throughout the building, each of which serves a dozen or more customer premises. In each IDF, an OverVoice control unit is installed, from which station cables connect to the end users' apartments. It is in the IDF, on a specialized 110 block/concentrator, that voice and data signals are segregated by OverVoice electronic equipment. The data signals pass through an Ethernet hub, sometimes located in the same room as the IDF, to the OverVoice control unit. Data and voice signals are combined in the OverVoice control unit and carried over the same copper cable to the customer's premises, each in a different frequency range. A specialized replacement wall jack is also installed inside the customer's apartment, incorporating an RJ-14 voice receptacle and an RJ-45 modular data receptacle.

In MTEs where the ILEC controls existing copper wiring, CAIS sometimes finds that "spare" riser cable is available from the MDF to the various IDFs throughout the building. However, it is almost never the case that spare copper wiring is available from the IDF to the Customer's premises. In either case, whether spare cable is available or not, it is not technically necessary to segregate

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<sup>2/</sup> (...continued)  
arrangement depicted in Exhibit A assumes the availability of "spare pair" copper wiring in the building's risers.

OverVoice onto copper cable of its own, because OverVoice has been designed to operate simultaneously with voice communications on the same wiring.

B. OverVoice Functions on Simple or Complex Inside Wiring Without Interfering With Voice Communications.

Part 68 of the FCC's rules regulates the terms and conditions for the connection of customer-provided wiring and equipment to the public switched telephone network. The FCC has largely deregulated inside wire in a series of orders over the past 25 years. Early in its review of inside wiring matters, the FCC identified inside wiring as being of two types: simple and complex.<sup>3/</sup> Simple inside wiring was defined as all telephone plant located on the customer's side of the demarcation point, and which is used for up to four lines.<sup>4/</sup> The FCC defined "complex inside wiring" as that wiring which is used for more than four lines in association with PBX or key system equipment.<sup>5/</sup> Most OverVoice applications in MTEs utilize simple inside wiring, although the

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<sup>3/</sup> See, e.g., *In re Detariffing the Installation and Maintenance of Inside Wiring*, CC Docket No. 79-105 ("Second Report and Order") 51 Fed. Reg. 8498, 8498 n. 1.

<sup>4/</sup> In a recent order, the FCC amended the definition of simple installations from one or two lines to up to four lines. *Order on Reconsideration, Second Report and Order and Second Further Notice of Proposed Rulemaking*, Review of Sections 68.104 and 68.213 of the FCC's Rules Concerning Connection of Simple Inside Wiring to the Telephone Network and Petition for Modification of Section 68.213 of the FCC's Rules filed by the Electronic Industries Association; CC Docket No. 88-57, RM-5643, 12 FCC Rcd 11897, 11924-25 (1997) ("1997 Reconsideration Order").

<sup>5/</sup> The 1997 Reconsideration Order similarly redefined complex inside wiring. *Id.* Complex wiring previously had been defined to include "all cable and wire and its associated components (e.g., connecting blocks, terminal boxes, conduit between buildings on the same customer's premises, etc.) which connect station components to one another or to the common equipment of a PBX or a key system." *Report and Order*, Modifications to the Uniform System of Accounts for Class A and Class B Telephone Companies Required by Detariffing of Customer Premises Equipment and Proposed Detariffing of Customer Provided Cable/Wiring, CC Docket No. 82-681, 48 Fed. Reg. 50534, 50534 at n.4 (continued...)



technology has also been marketed successfully to the hospitality industry, where complex inside wiring is more common.

In its *1984 First Report and Order*, the FCC also promulgated a definition of the "demarcation point" which would serve as the point at which carrier and customer responsibilities were separated. Specifically, the FCC concluded that "network plant" remained the responsibility of the local exchange carrier ("LEC"), while inside wire became the customer's responsibility.

OverVoice has been successfully implemented in approximately seventy buildings throughout the United States. As indicated in the affidavit attached as Exhibit B, OverVoice has not been found to interfere with existing voice telephone service.

### **III. DISCUSSION**

Since 1990, customers have had the right to install their own "inside wiring," the term applied to wiring located on the customer's side of the demarcation point. But, the actual location of the demarcation point in MTEs is subject to some flexibility under FCC rules. In most buildings constructed before August 13, 1990, the demarcation point has been established at a point near to the place at which the wiring enters an end-user's premises. As a result, most wiring in MTEs is actually on the "network plant" side of the demarcation point.

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<sup>5/</sup> (...continued)  
(1983) ("*1983 Complex Wiring Order*").

Even the terminology used in this debate is confusing to building owners and new entrants, beginning with the term "inside wiring." The Commission has defined inside wiring as "telephone plant, including materials and labor, installed on the customer's side of the demarcation point."<sup>6/</sup> As previously discussed, if the demarcation point is close to a customer's premises in an MTE, most of the network wiring in the building will not actually be considered "inside wiring" at all. However, in buildings where the demarcation point is at the Minimum Point of Entry, "inside wiring" may extend throughout the building.

Compounding the confusion and misinformation is the matter of ownership. In 1986 the Commission determined that telephone companies should not be required to relinquish ownership of inside wiring.<sup>7/</sup> This decision has permitted employees of the incumbent telephone companies to inform landlords and new entrants, perhaps accurately, that the ILEC "owns" the inside wiring. If this claim is combined with a misunderstanding of where inside wiring begins and ends, most property owners will be dissuaded from permitting competitors to utilize existing wire facilities. The Commission made its determination of inside wiring ownership to avoid a broad range of real and hypothetical problems raised by some incumbent carriers, and accompanied the decision by rules precluding anti-competitive conduct that the Commission wished to prevent.<sup>8/</sup> But, in practice, most

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<sup>6/</sup> See *Second Order and Report*, n. 2.

<sup>7/</sup> *In re Detariffing the Installation and Maintenance of Inside Wiring*, CC Docket No. 79-105, Memorandum Opinion and Order, 1FCC Rcd 1190, 1195 (1986).

<sup>8/</sup> *Id.*

persons confronted by a claim of ownership by the telephone company are inclined to believe "own" means "own," with all the ordinary attributes. When added to the fact that most property owners are grateful not to have wire maintenance problems to deal with, confusion over terminology and ownership issues usually results in the ILECs enjoying a substantial degree of control over house and riser cabling, on both sides of the demarcation point.

CAIS believes that confusion and inconsistency, engendered by the current regulatory approach to house and riser cabling, contributes to limiting the competitive services available to residential customers. Telephone companies that control network in-house wiring are the same entities whose market share can only be expected to suffer from introduction of competitive carriers' services in these buildings, and so have little incentive to facilitate change.

It has been the experience of CAIS employees in New York, reinforced by reports received from elsewhere, that ILECs will not permit competitors' data services to be provided over existing operational voice lines within an MTE. Nor will any ILEC permit cabling it maintains to be used for any service that competes with its own, except if the cabling is rented to the competitors as "spare" cabling. Spare cabling is often unavailable, particularly in buildings that are more than five years old. CAIS has also concluded that the prices charged by ILECs for available spare cabling is unreasonably high, and may not be offered at all by ILECs on a retail basis.

Even in buildings constructed after 1990, the problem continues. Much of the cabling installed in MTEs, even in the past few years, continues to have demarcation points located at or near the end users' premises. This allows the ILECs to continue claiming ownership of virtually all the

building's wiring. Moreover, CAIS has found that much of the ILEC-installed wiring has filled the available conduits in buildings' vertical risers, sometimes with substantial spare capacity. Therefore, if CAIS is unable economically to justify rental of the ILEC's spare cabling, the alternative of installing its own cabling would be rendered more costly by the need to also install additional conduit.

It is also the experience of CAIS' employees that property managers are familiar with the ILECs' opposition to competitors offering data service over existing voice lines. In recent weeks, CAIS has encountered resistance from property managers to the OverVoice product, based on ILEC opposition.

As these examples demonstrate, the regulatory status quo that has led to this situation impedes the deployment of advanced technologies that would better utilize existing inside wiring, and thwarts the Commission's efforts to promote competition and the development of facilities-based competitive alternatives, particularly to residential customers.

#### **IV. RECOMMENDATIONS**

A. The Demarcation Point in MTEs Should Be Located at the Minimum Point of Entry.

OverVoice will enable competitive carriers to utilize otherwise-wasted frequency spectrum on existing building wiring. Without an FCC mandate to uniformly locate the Demarcation Point of the building's Minimum Point of Entry, ILECs will almost certainly veto any installation of technology such as OverVoice. In the absence of an order moving the Demarcation Point in each

building to the Minimum Point of Entry, much of the copper wire's capacity will be wasted, or simply "warehoused" until the ILECs determine that they have their own use for it.

The Commission possesses the authority to mandate moving the Demarcation Point to the Minimum Point of Entry under its general Title II authority to enforce requirements that common carrier facilities be made available to competitive carriers on just, reasonable and nondiscriminatory terms and conditions, pursuant to Sections 201 and 202 of the Communications Act.<sup>2/</sup>

B. Irrespective of Its Decision as to the Proper Location of the Demarcation Point, the Commission Should Mandate Access to In-Building Cable and Wiring.

If the Commission does not mandate the relocation of the Demarcation Point in residential MTEs to the Minimum Point of Entry, in-house cable and wiring must still be available to building owners and telecommunications users in order for them to access services like OverVoice. Access to existing in-house wiring, installed at ratepayers' expense, would eliminate the significant cost to competitors of having to construct their own new facilities, and would therefore encourage competition. The Commission should issue regulations that protect competitive providers of telecommunications services from the anti-competitive practices of incumbent telephone companies that exert control over MTE riser cables and inside wiring.

The Commission now seeks comment on the preferred engineering arrangements within MTEs, and for the types of arrangements considered feasible by providers. The Commission has also asked for comment on the potential treatment of in-building cable and wiring owned or

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<sup>2/</sup> See 47 U.S.C. §§ 201 and 202.

controlled by the ILECs, and whether that wiring should be offered as unbundled network elements under Section 251(c)(3) of the Communications Act. CAIS maintains that the FCC's inside wiring rules should eliminate any unreasonable practice that prevents access to inside wiring by competitive providers such as CAIS. Competitive providers should be able to identify potential markets, invest in technology and market their services without fear that ILECs' control of inside wiring will impede or stalemate the success of a new product.

CAIS has significant concern with relying on ILECs to provide access to unbundled subloop facilities in multi-tenant buildings. CAIS believes that ILECs may attempt to deny Internet Service Providers access to those essential network elements on the basis that most ISPs are not certificated by state regulatory commissions. Therefore, any order which results from this proceeding should clarify that all potential users are entitled to access MTE wiring at non-discriminatory prices. CAIS believes that the only non-discriminatory price that an ILEC can charge for in-house wiring would be a price equal to the incremental cost that the ILEC imputes to its own services.

C. The Commission Should Preempt State Authority over Inside Wiring Issues in Order to Develop and Implement Consistent Nationwide Policies over MTE Inside Wiring.

Access to inside wiring should not, as a practical matter, be subject to disparate state-by-state regulations. Federal regulations providing for competitive and non-discriminatory access to inside wiring are needed. CAIS believes that most State Commissions would proceed too slowly to detariff simple inside wiring and implement multi-user sharing of MTE inside wiring. In particular, State Commissions would be concerned that when inside wiring is unbundled from basic transmission

service, every trouble call could become a matter of "finger-pointing" between providers, especially if more than one provider uses the same line. The ILECs will certainly raise the prospect that service charges will be imposed on customers who happen to report trouble on their lines to the wrong provider. Incumbents can also be expected to raise the potential issue of harm to the network, notwithstanding the protections already in place in Part 68 of the Commission's regulations. All such concerns need to be considered, and solutions devised whenever the concerns are found to be substantiated, but competitors should not be required to address these issues again and again in every state. Rectifying any substantiated concerns should not be allowed to hamstring the introduction of a new competitive service. The Communications Act of 1934 authorizes and directs the FCC to establish procedures which promote non-discriminatory accessibility to the broadest number of vendors of communications products and services.<sup>10/</sup> Running a gauntlet of regulatory proceedings in multiple states would discourage the introduction of competitive services over existing simple inside wiring, and frustrate the FCC's objective of bringing competition to residential consumers. CAIS believes that the potential undermining of such legitimate Federal policy calls for preemption of state authority under the doctrines established in relevant case law.<sup>11/</sup> In dealing with technical and operational issues, the FCC is the agency best equipped to receive and consider the input of concerned parties, and balance those parties' respective interests. The Commission possesses all requisite power.

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<sup>10/</sup> 47 U.S.C. § 256.

<sup>11/</sup> See *National Ass'n of Regulatory Util. Comm'rs v. FCC*, 880 F.2d 422, 430 (D.C. Cir., 1989).

D. Irrespective of its Decision as to Whether to Relocate the Demarcation Point to the Minimum Point of Entry, Competitive Providers Should be Permitted to Perform Their Own Installation and Maintenance on Building Wiring.

Competitive providers should be able to work on in-house wiring from the building entrance to the customer's wall jack. Allowing providers to perform their own installation and maintenance activities will permit competitors to exercise some control over their schedule and technologies. Certain technologies, such as OverVoice, require unique installation which could be hampered by forced reliance on telephone company technicians. The Commission should, however, require that providers employ qualified technicians and give prior notice to other companies that share the same wiring.

#### IV. CONCLUSION

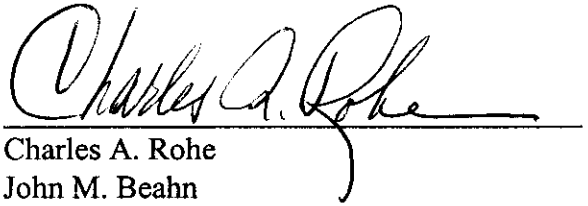
The Commission should adopt regulations that modify the current regulatory environment applicable to competitive providers' access to existing wiring in Multi Tenant Environments. Maintaining the status quo would impede introduction of new services that more efficiently utilize copper wire resources. The Commission should mandate that the Demarcation Point be uniformly



Comments of CAIS, Inc.  
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located at the Minimum Point of Entry, or (in the alternative) adopt regulations that in-house wiring be made available to all potential users.

Respectfully Submitted,

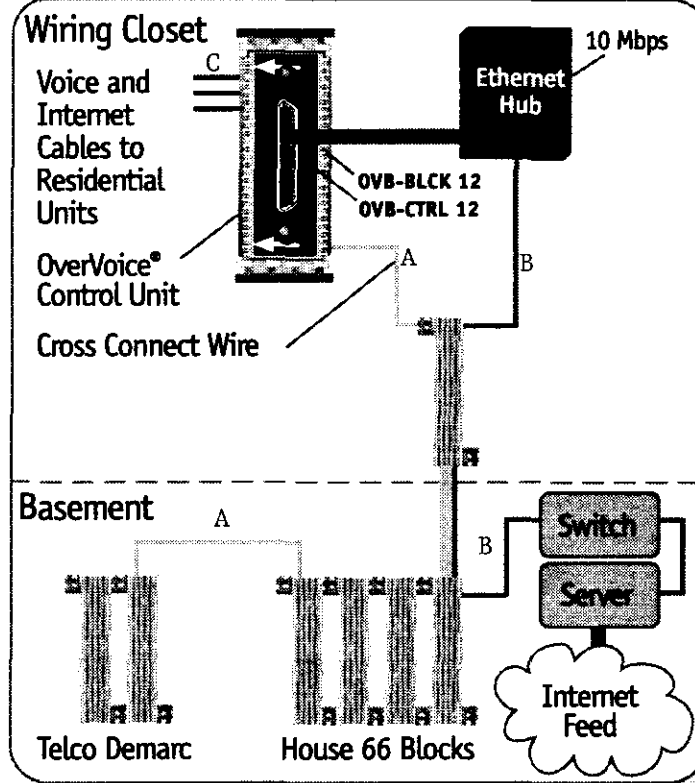
A handwritten signature in cursive script, reading "Charles A. Rohe", is written over a horizontal line.

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Counsel for CAIS, Inc.

# EXHIBIT A

## OverVoice® Wiring Infrastructure (Detail)



### Key

- A = Voice
- B = Data
- C = Combined

# EXHIBIT B

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**AFFIDAVIT OF DAVID D. GOODMAN**

1. I, David D. Goodman, am president of Inline Connection Corporation. I currently work in that capacity as a consultant to CAIS, Inc., referred to hereinafter as "CAIS." My business address is 730 North Danville Street, Arlington, Virginia.

2. I have been president of Inline Connection for eleven years. During that time, I have gained extensive experience designing and building specialized networks for transmission of data and video signals over twisted pair wires. I hold a Masters degree in Engineering from the Massachusetts Institute of Technology.

3. I devised the network technology now known as OverVoice. I have been asked by CAIS Inc. to describe that technology, and also to explain any technical difficulties it might create in a multi-tenant residential environment.
4. OverVoice allows voice and data signals to be carried simultaneously on the same copper wiring within a customer's building. Most residential inside wiring is used solely for analog voice service (plain old telephone service, or "POTS"), utilizing frequencies between 0Hz and about 5 KHz. Digital PBX and ISDN services utilize up to about 250 KHz. ADSL, HDSL and RADSL signals utilize frequencies that are higher than 10 KHz, but never exhibit any substantial energy in excess of 2 MHz. OverVoice utilizes the spectrum from 3 MHz to 15 MHz for communication using the industry-standard 10 BaseT Ethernet protocol.
5. The very large separation in frequency between OverVoice and signals required for POTS, ISDN, and DSL services enables one to eliminate all potential for interference between services using the same wires or neighboring wires in the same bundle. The only requirement is the use of passive filters to separate the signals flowing to the various devices. The filters insure that voice signals only flow to telephone equipment, ISDN signals only flow to ISDN electronics (modems, etc.), DSL signals only flow to DSL electronics, and OverVoice signals only flow to standard Ethernet equipment.
6. In a typical OverVoice installation, CAIS Internet will purchase a dedicated LEC circuit to establish a high data rate link between its point-of-presence and the basement telephone room of a multi-tenant environment ("MTE"). In that room, the circuit is connected to a CAIS-installed authentication server and ethernet switch, referred to jointly as the "Main Distribution Frame" or "MDF." The MDF transmits ethernet signals through high pass filters and onto existing copper wiring throughout the building, utilizing the 3MHz to 15 MHz frequency spectrum. Because of the filters and the separations in frequency, there is never interference with POTS, ISDN, and DSL signals that may share the same wires or neighboring wires. The

connection and filtering system used by OverVoice has obtained FCC Part 68 registration number 5WLUSA-33173-DV-N (file number 2873-CX-98, granted September 3, 1998).

7. Intermediate distribution frames must be established throughout large buildings. In these intermediate facilities, known as the "IDF," CAIS Internet Inc. installs an aggregation switch that is connected to the wiring through the same filtering system used in the MDF. Finally, in the end-user's actual premises, CAIS Internet Inc. removes the standard telephone jacks and replaces them with a jack comprised of RJ45 connectors, RJ11 connectors, and the appropriate passive filters.

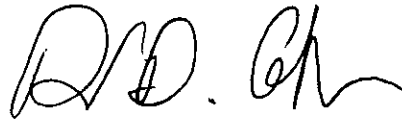
8. Prior to introducing the OverVoice service, I personally conducted tests of the service. These tests occur between December, 1996, and June, 1997 and were comprised of the following:

Many different wiring networks were identified, consisting of two twisted pair segments of wires connected together and running from wiring closets to end users in various hotels and apartment buildings. Ordinary voice ("POTS") communication and 10BaseT Ethernet communication were established over each of these networks. The data devices and the telephone devices were isolated, in each case, by single pole filters connected in series on each conductive path. At each wiring network, the data and voice signals were transmitted, simultaneously, over at least one of the two pairs, for a period of a minute or more. No interference with voice communication was ever detected. This is in exact harmony with theoretical predictions

9. CAIS Internet, Inc.'s first commercial trial of OverVoice was conducted beginning in June, 1997. Since that date, OverVoice has operated successfully, with almost no complaints of interference between OverVoice and POTS services. All of the few complaints were related to wiring mis-connections that occurred during installation, and they were all repaired immediately.

10. Based on my experience, OverVoice operates simultaneously on the same copper wiring with other voice and data signals without causing any significant interference with the other uses. There is absolutely no technical impediment to allowing OverVoice to share existing copper in house wiring with other telecommunications applications.

I declare under penalty of perjury that the foregoing is true and correct. Executed this 26<sup>th</sup> day of August, 1999.

A handwritten signature in black ink, appearing to read "D.D. Goodman", written over a horizontal line.

David D. Goodman